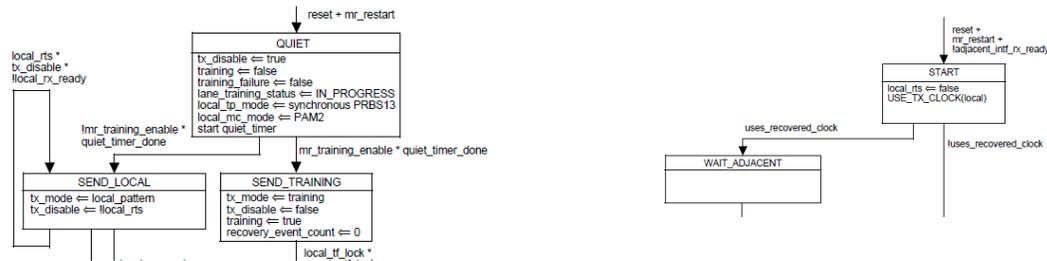


APSU restart

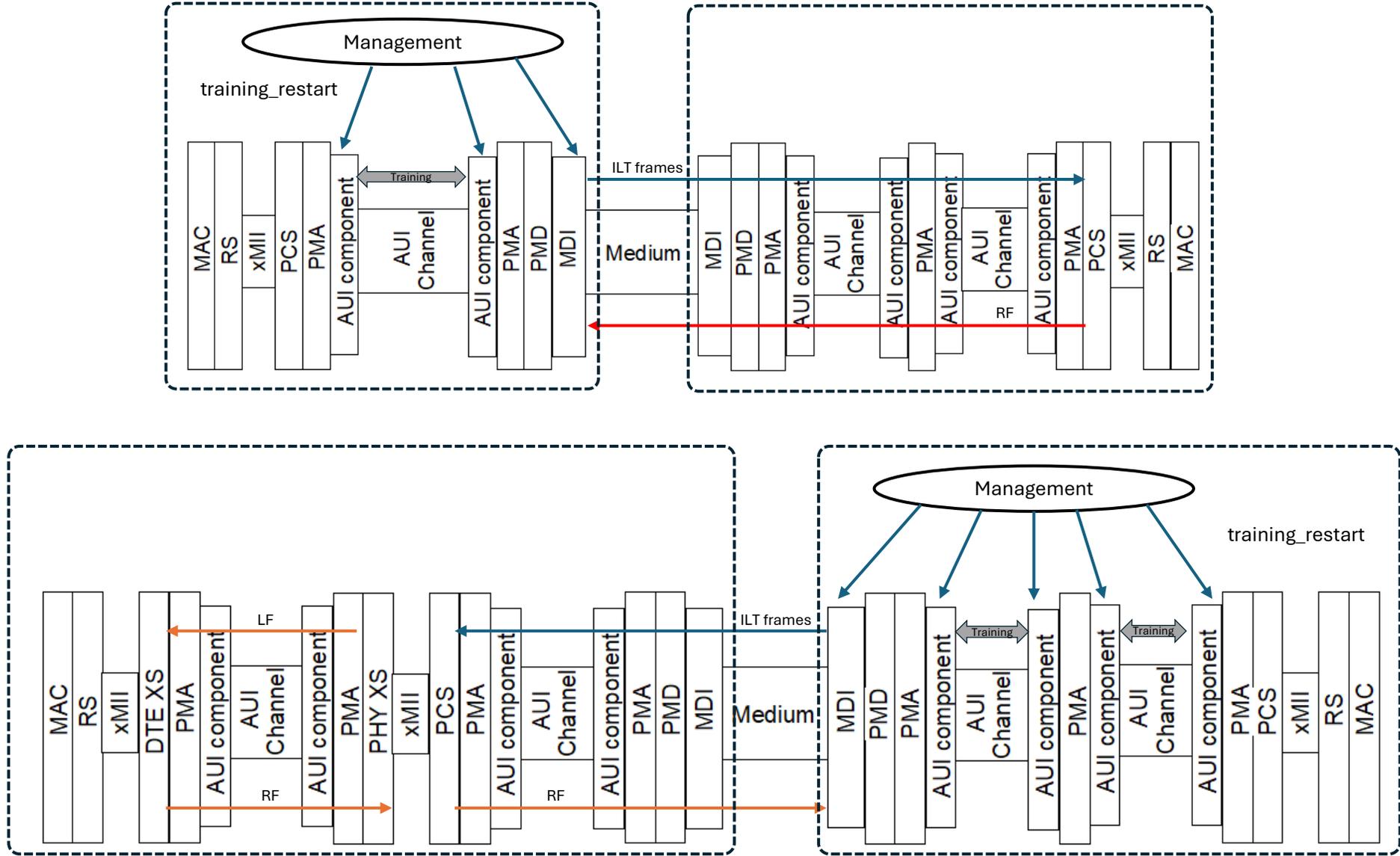
Leon Bruckman, Nvidia

APSU restart cases

- APSU is activated only when the link is initialized
- D3.0 does not specify when APSU is restarted
 - Restart can be triggered by either reset or training_restart



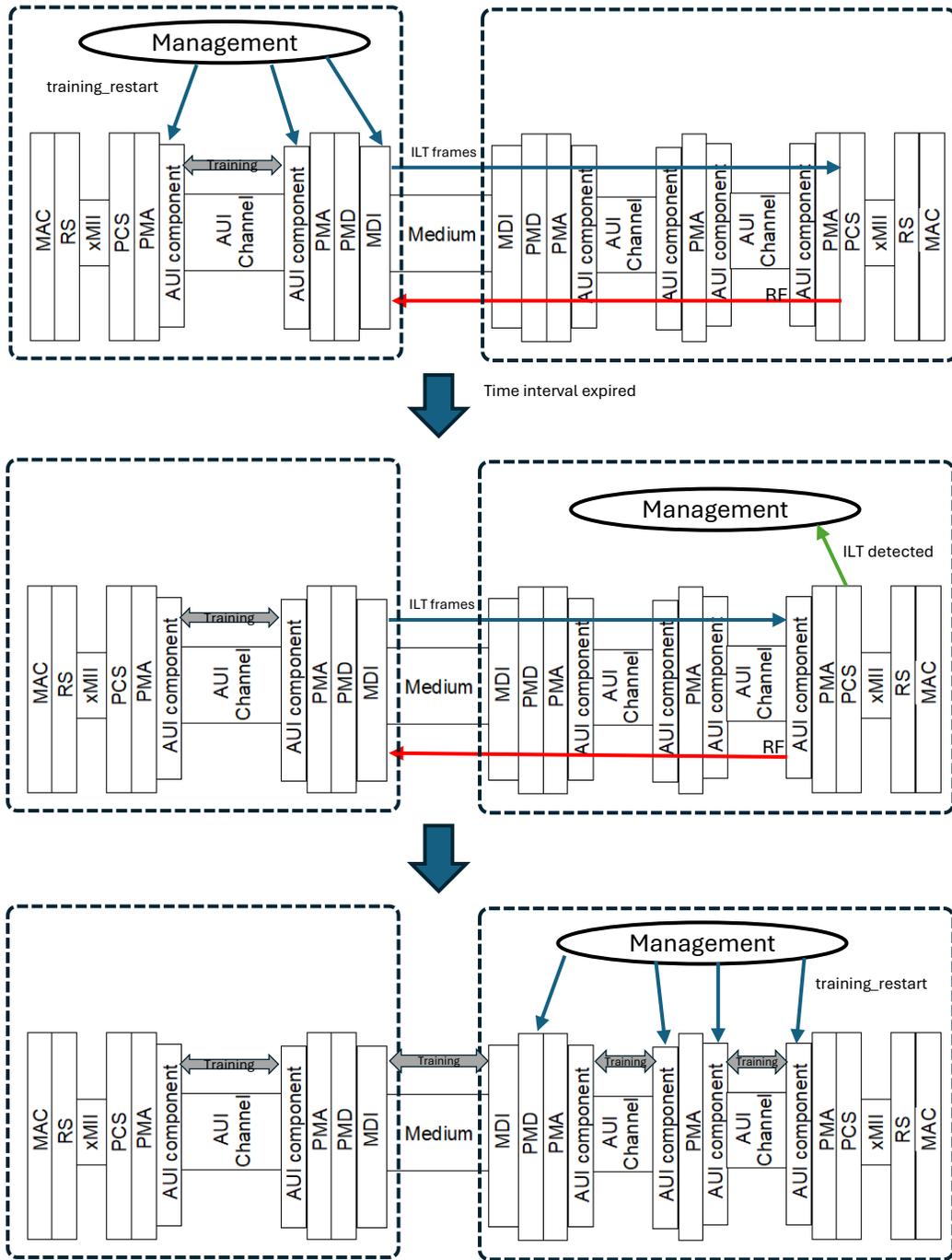
- APSU may be restarted in one side of the link due to several reasons
- In this case the link will not be able to finish APSU since the peer is not aware of the APSU restart
- D3.0 relays on management to solve this dead-lock



- In both cases the link will be in a dead lock

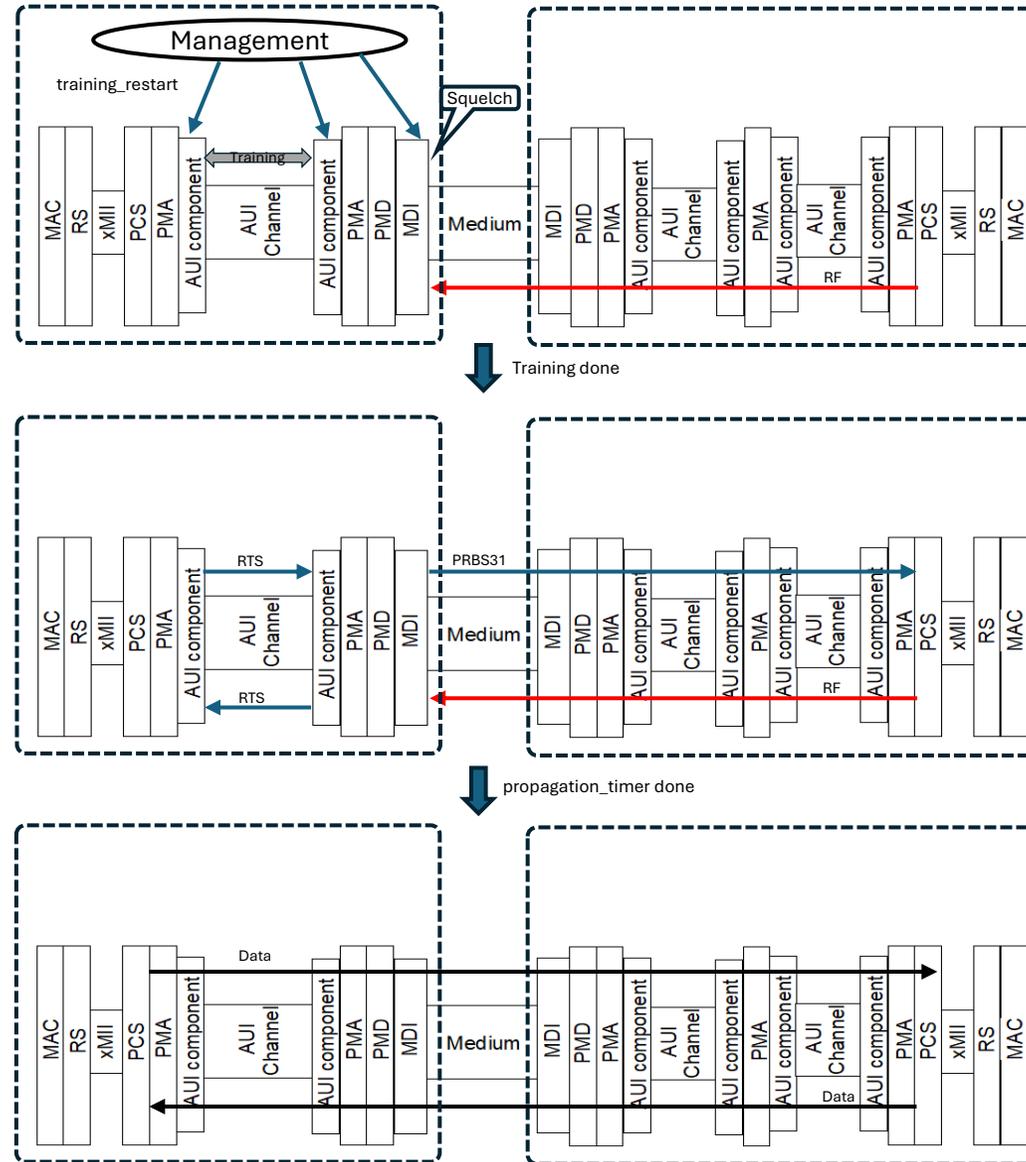
Options

- Option 1: Let network management resolve the issue
 - But management may not have access to both sides of the link
- Option 2: Send indication from PCS to the management indicating that ILT frames are detected
 - Management can then decide to restart training to complete the APSU process
 - Note that the “Training frame lock state diagram” in Figure 178B-11 is defined as running continuously, regardless of data/training mode – and if it locks on training frames in data mode.
- Option 3: Restart APSU every time RxLOS is detected
 - Path up time will be increased for RxLOS not related with APSU restart
 - Note that according to Figure 178B-12—Coefficient update state diagram, `ic_req` is set to initialize, so the whole training process will be restarted
 - Time to link up:
 - `quiet_timer` (200 msec) + time of one iteration at least of verifying the Tx equalizer config (may take a while since BER will probably be low) + `propagation_timer` (200 msec) + ILT frames handshakes (that involve some firmware handling)



mr_training_enable = false

- If mr_training_enable = false there is no dead lock



Special case

- Assume two links that finished APSU
 - A<->B and C<->D
- The fibers of both links are interchanged
 - A<->D, C<->B
- The optical channel changed for both links
 - The C2M and C2C channels did not change
- No APSU will be triggered
 - No problem since there is no optical link training defined in Annex 178B

Proposal

- Adopt option 2
- Add to the “reset” variable the following condition:
 - `align_status = false` and `local_tf_lock = true` for more than `soaking_time`
- Note that the “reset” shall be applied to the host that detected the condition and all the modules controlled by the local management